226 L–1907 2907, '06, 5,000 (P)

The Department of Health, City of New York, Sixth Avenue and Fifty-fifth Street—The Administrative Control of Tuberculosis.

1907

THE ADMINISTRATIVE CONTROL OF TUBERCULOSIS.

BY HERMANN M. BIGGS, M. D.

Chief Medical Officer Department of Health, City of New York

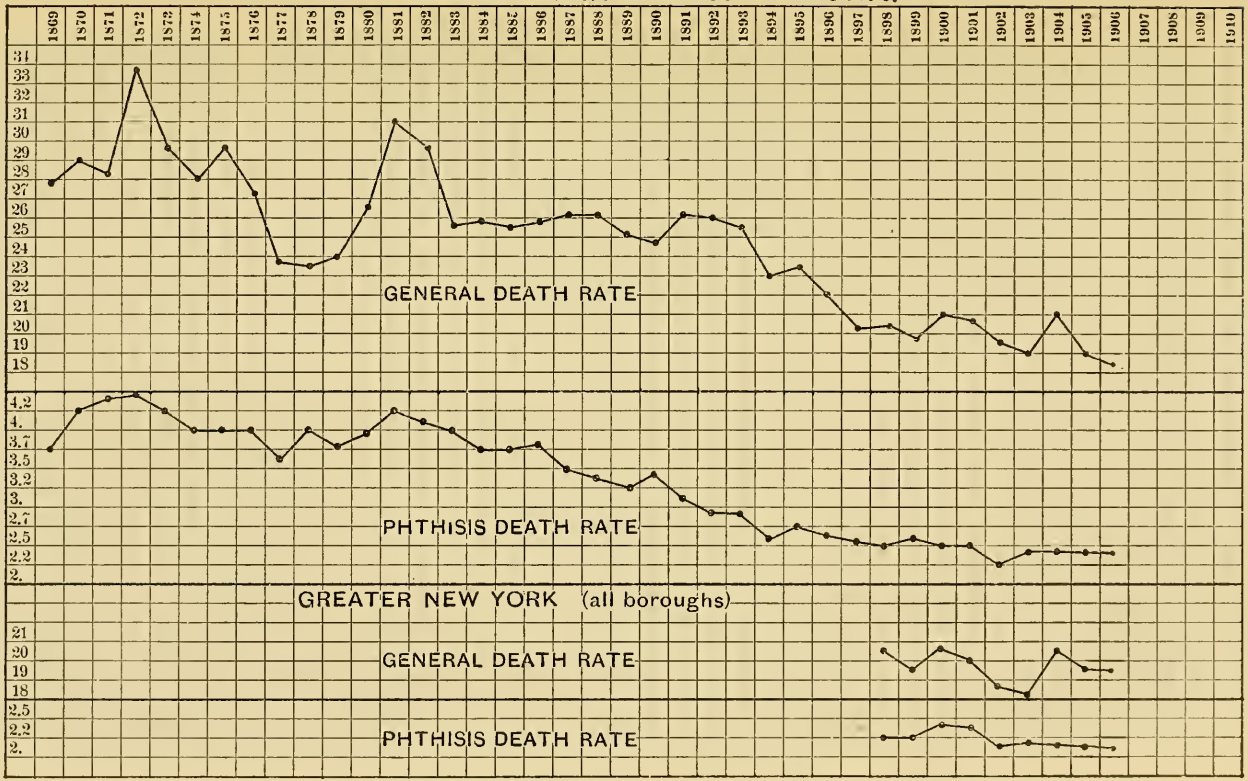
When we consider the transcendent importance to the human race of the observations of Koch on the etiology of tuberculosis, and the completeness of his demonstration of the communicable and preventable character of the disease, it seems difficult to understand the limited extent of the sanitary procedures since adopted and enforced for its restriction. The imperative demand for the enforcement of comprehensive measures for the prevention of tuberculosis should have been as evident to sanitarians twenty years ago as it is today. No facts have been added to our knowledge within this period which are really essential to the intelligent sanitary surveillance of this disease. The universal prevalence of the disease, its infectious and communicable character, its preventability and curability, all of these facts—the important ones bearing on the administrative control—are not of recent discovery. They have not been developed by the agitation of the past few years, but were as manifest to the student of this subject fifteen or twenty years ago as they are now. Very slowly has a partial comprehension of the tremendous significance of these simple well-known facts forced itself on the minds of the medical profession, the sanitary and civil authorities, and the people. Even now, only here and there throughout the civilized world have measures been put into effect looking to the administrative control of tuberculosis. Notwithstanding all that has been said and written, notwithstanding the popular education and agitation, notwithstanding the formation of antituberculosis societies and antituberculosis leagues, notwithstanding the organization of many associations for the erection of sanitoria, and the foundation of institutions for the study of tuberculosis, notwithstanding the measures adopted

for the prevention of the disease in animals, still only a very small percentage of the governmental municipal and State sanitary authorities of this country, Great Britain and the Continent have adopted provisions which can be regarded as in any way comprehensive, or effective in dealing with this disease.

If we seek for an adequate explanation for this attitude, it is not after all difficult to find. In speaking of this matter somes years ago, Koch said in substance to the writer, "the adoption in Germany of such measures as are already in force in New York City will not be possible until the generation of medical men now in control have passed away. Not until a younger generation has appeared, which has had a different scientific training, and holds views more in harmony with the known facts regarding the etiology of tuberculosis, will it be possible in my opinion to bring about an intelligent supervision of this disease."

The idea has been so firmly fixed in the minds of the authorities and of the medical profession, that administrative control applies only to the more readily communicable acute diseases, like smallpox, scarlet fever, diphtheria, etc., that the inclusion of tuberculosis with these diseases has seemed to them impracticable, and the enactment of suitable legislation conferring power on the authorities to deal with this disease in another way has either not been considered or has been regarded as impossible. In only a few instances have effective measures been adopted, and in these instances, as was the case in New York, the power has usually rested with the sanitary authorities themselves to determine what diseases should come under their surveillance, and under what conditions.

Notification is a necessary preliminary to any plan of supervision, and yet some years ago a special commission of the Academy of Medicine of Paris reported against a proposition to place tuberculosis in the class of notifiable diseases. Two principal reasons were advanced against the proposition: First it was pointed out that notification involved the divulging of a medical secret, which would be harmful to the patient (this applies of course with equal force to the diseases usually called contagious); and it was


MANHATTAN AND THE BRONX.
1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910
34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18
GENERAL DEATH RATE
4.2 4. 3.7 3.5 3.2 3. 2.7 2.5 2.2 2.
PHTHISIS DEATH RATE
GREATER NEW YORK (all boroughs)
21 20 19 18
GENERAL DEATH RATE
2.5 2.2 2.
PHTHISIS DEATH RATE

furthermore insisted that as the public did not regard tuberculosis as being contagious, or in the same class with the contagious diseases, but considered the disease hereditary, the public would not accept such a legal enactment without protest and resistance. The second reason was regarded as more important and was in effect that in a family unwilling to follow instructions sanitary restrictions would be impossible, as an almost continuous intervention would be required on the part of the sanitary officers for months and years. The only efficient alternative in such cases, it was pointed out, would be the consignment of the consumptive to a hospital, a practice followed in Norway. The Commission concluded that compulsory notification must not be considered, at least at that time.

Sir Richard Thorne, the Medical Officer to the Local Government Board of Great Britain, in the Harben lecture in 1898 on "The Administrative Control of Tuberculosis," after a careful consideration of the various problems presented under the English law relating to infectious diseases, pronounced definitely against this proposition, on the ground that the hardship to the individual, which would follow notification and the enforcement of proper regulations, would be so great as to render this measure unjustifiable. In the same year the Academy of Medicine of New York, through a special committee appointed to consider the regulations, which had then been adopted by the Department of Health of New York City regarding notification, declared it as its opinion that the procedure was at that time inexpedient and inadvisable. Every important medical society in New York City then expressed even more strongly than the committee of the Academy the opinion that the action of the Health Board was unwise and unwarranted.

In the action of these and other societies and commissions, and in the opinions expressed by various authorities throughout the world, it has always been evident that they have been influenced by precedents as to the functions of the sanitary authorities, and have felt very strongly the striking difference between tuberculosis and the diseases, which had previously been subject to sanitary control. It has often been pointed out that the so-called contagious diseases are

acute, and the whole history of even the most protracted case is comprised within a period of a few weeks, or at most a few months, whereas with tuberculosis, the infectious period usually extends not simply over a few months, but more frequently over several years, and it may comprise half a lifetime.

The contagious diseases usually entirely incapacitate the individual, during the early period at least, and the dangers of the transmission of the infection are so great and the evidence of it so immediate, that no questions can properly be raised as to the justification for proper isolation and supervision. On the contrary, all authorities agree that under proper conditions the consumptive is not necessarily a source of danger, even to his most intimate associates. He may be able to pursue his usual avocation for years. The danger of the transmission of the disease is much less evident, and the source of infection is much more difficult to trace.

The consideration of these and other important points of difference between tuberculosis and the contagious diseases has dominated the situation. It has seemed difficult for the medical or lay sanitary authorities to understand, that with the new knowledge afforded by the observation of Koch and others an entirely different sanitary problem was presented for their consideration, and that for its solution new methods must be adopted. Very gradually comprehension of this simple and apparently quite self-evident fact has forced itself upon them. It may be said, I think, to be now an almost universally accepted fact that some kind of action or supervision is justifiable and necessary, and the only difference of opinion is as to the extent of the measures which should be adopted and as to the manner of their enforcement.

It is my desire in this address to present for your consideration, what it seems to me these procedures should be, and also in part what they are now in New York City. I may say in passing that so long ago as 1887 I had the privilege, in conjunction with the other consulting pathologists to the Department of Health of New York City, of advocating the adoption in New York of measures almost as comprehensive as those now in force, but it was so evident at that time, that neither the medical profession nor the people of the City

would approve these measures, that the Board of Health felt their immediate adoption in toto was inadvisable.

What measures then does the efficient administrative control of tuberculosis require?

1. The compulsory notification and registration of all cases is essential. The fundamental importance of this measure is so evident that its consideration seems hardly necessary. It must of course appear at once that unless there is a system of compulsory notification and registration, the enforcement of any uniform measures for prevention is impossible. Practical experience with this procedure has made it perfectly clear that the objections which have been urged against it are without force or foundation.

In New York City in 1893 a system of partially voluntary and partially compulsory notification was adopted. Public institutions were required to report cases coming under their supervision; private physicians were requested to do this. Under this provision the Department of Health carried on this work for three and a half years, and then adopted in 1897 regulations requiring the notification of all cases. For a number of years, while continuous pressure was brought to enforce this provision, it was not strictly enforced, although more and more complete compliance with its requirements was each year attained.

It has already been said that as tuberculosis radically differs from the more readily communicable diseases usually called contagious, so the measures for the sanitary supervision of tuberculosis must differ from the measures adopted in this class of diseases. This should be the attitude of the health authorities always, in the enactment and enforcement of all regulations. The information contained in the reports of cases should be regarded as confidential information, and action should only be taken by the authorities in those instances where the conditions require it.

The notification of a case of tuberculosis does not require any action on the part of the authorities, if it seems reasonable to assume that such action is unnecessary. The very fact that tuberculosis is notified by the attending physician as a communicable disease has the greatest educational value, and justifies the assumption in those instances,

TABLE SHOWING DEATH RATES FROM ALL CAUSES AND DEATH RATES FROM TUBERCULOUS DISEASES PER 1,000 POPULATION IN NEW YORK, LONDON, PARIS, BERLIN AND VIENNA, FROM 1886 TO 1906 INCLUSIVE.

	NEW YORK		LONDON		PARIS		BERLIN		VIENNA	
Year	General death rates	Tubercu. death rates	General death rates	Tubercu. death rates	General death rates	Tubercu. death rates	General death rates	Tubercu. death rates	General death rates	Tubercu. death rates
1886.....	25.99	4.42	20.6	2.93	25.25	5.56	25.6	3.4	26.6	7.0
1887.....	26.32	4.06	20.3	2.71	23.92	5.15	21.8	3.1	25.8	6.4
1888.....	23.39	3.99	19.3	2.54	22.92	4.93	20.3	3.1	25.2	6.2
1889.....	25.32	3.86	18.4	2.56	23.78	5.11	23.0	3.3	24.5	5.8
1890	24.87	3.97	21.4	2.94	23.70	5.26	21.5	3.0	24.4	5.8
1891.....	26.31	3.56	21 4	2.81	22 45	5.13	20.8	2.9	25.0	5.7
1892	25.95	3.55	20.7	2.68	23.24	4.54	19.9	2.6	24.9	5.5
1893.....	25.30	3.51	21.2	2.65	22.25	4.92	21.0	2.7	24.0	5.1
1894	22.76	3.16	17.80	2.43	21.32	5.10	17.6	2.5	23.2	5.0
1895	23.14	3.35	19.9	2.50	22.3	5.0	20.2	2.6	23.3	5.3
1896.....	21.84	3.11	18.6	2.40	20.1	4.8	18.0	2.5	22.3	4.9
1897	20.03	2.98	18.2	2 46	18.6	4.6	17.7	2.5	20.9	4.7
1898	20.46	2.99	18.8	2.48	19.7	4.79	17.2	2.4	20.1	4.3
1899 ...	19.81	3.08	20.0	2.55	21.5	5.12	18.7	2.6	20.9	4.7
1900	21.03	3.00	19.2	2.42	22.1	5.46	19.0	2.67	21.0	4.76
1901	20.45	2.85	17.7	2.34	18.3	4.57	18.0	2.52	19.8	4.54
1902	19.11	2.63	17.7	2.26	18.1	4.53	16.1	2.39	19.6	4.45
1903.....	18.57	2.70	15.7	2.19	17.2	4.47	16.5	2.16	18.6	4.40
1904.....	21.02	2.71	16.6	2.23	17.7	4.49	16.9	2.40	18.3	4.10
1905 ...	18.91	2.66	15.6	1.99						
1906 ...	18.71	2.72								

GREATER NEW YORK

Year	General death rates	Tubercu. death rates
1898	20.26	2.69
1899.....	19.47	2.70
1900	20.57	2.80
1901.....	19.90	2.64
1902	18.58	2.42
1903.....	17.95	2.46
1904.....	20.01	2.51
1905.....	18.32	2.42
1906	18.35	2.45

in which the case is under the supervision of a private physician, that reasonable and necessary precautions for the protection of others will be taken. If, however, the consumptive has the diseases in an infectious stage and is without a home, or is living in a lodging house, or in a poorly furnished room, or in a family in a tenement house, or is receiving charitable medical advice through some public institution, then all objection to the interference or the supervision of the authorities is removed, and in the interests of the public such interference and supervision become necessary. Such is the attitude which has been adopted in New York City. It is assumed and stated positively that in all instances where the consumptive is under the care of a private physician and the latter will undertake to give such instructions as are necessary to prevent the transmission of the disease to others, no further cognizance of the case will be taken by the health authorities after the registration.

The fact should be strongly emphasized again, that the mere fact of notification and registration has in itself a very powerful educational influence. During the year 1902 more than 16,000 cases were reported to the Department of Health in New York City, of which 4,200 were duplicates, and in 1906 more than 30,000 cases were reported, of which over 10,000 were duplicates.

2. To facilitate the early and definite diagnosis of all cases of pulmonary tuberculosis, the sanitary authorities should afford facilities for the free bacteriological examination of the sputum in all instances of suspected disease. In a large proportion of the cases of early disease the physical signs and the symptoms are not sufficiently definite to permit a positive diagnosis by the general practitioner. An expert may easily arrive at a positive conclusion, but the general practitioner remains in serious doubt. In the absence of a positive result from an examination of the sputum, the attending physician awaits the appearance of more definite signs, and thus too often loses most valuable time, for these more definite signs mean further extension of the disease in the lungs. In some institutions and with many physicians, the positive position is assumed that no case is to be regarded as tuberculosis of the lungs unless tubercle bacilli are

found in the sputum. I need hardly point out how erroneous and dangerous is this opinion.

It is of course of vital importance that the diagnosis in every case should be made at the earliest possible moment. A large proportion of the medical profession, in the large cities particularly, have not the facilities, nor are they competent to make such bacteriological examinations. The Department of Health of New York City provided facilities for such examinations in 1894, early in the history of its attempt to exercise control over the disease, and this procedure has proved of very great value to the medical profession, to the sick, and to the authorities. Following the example of New York City, other sanitary authorities have adopted similar measures, and I think it is the general opinion now that such free bacteriological examinations should be made by the authorities, and that every convenience and facility for them should be afforded. It is a curious fact in this connection that large numbers of physicians in private practice who are unwilling or reluctant to directly report cases of tuberculosis, without hesitation send specimens of sputum for examination, with all the facts in relation to the patient which are necessary for registration. It is only on this condition that the examinations are made. During the year 1906 more than 21,000 specimens of sputum were examined in the laboratories of the Department of Health. These specimens came almost entirely from physicians in private practice. There are about 300 depots in New York City where the outfits, blanks, etc., for the collection of specimens of sputum may be obtained and where the specimens may be left for the Department collectors.

3. *Educational Measures.*—It is difficult to overestimate the importance of the duties of the sanitary authorities in the education of the medical profession and of the people on the subject of tuberculosis. Circulars designed to reach different classes of the community and covering different phases of the subject should be widely distributed, and the public press should be utilized to the very largest extent in the diffusion of information. The circulars as issued should be given to the press for general publication. A very important function is performed in this connection by the vari-

ous lay societies, associations, leagues, etc., organized for the prevention of this disease. By the means of circulars widely distributed through every possible channel, and general agitation in the lay press and numerous and repeated lectures before all classes of the community, a very broad dissemination of knowledge as to the nature of tuberculosis and the means to be adopted for its prevention may be attained. I need not further refer to this phase of the subject.

4. *The Visitation of Consumptives in Their Homes.*—An important part of the work of the authorities consists in the immediate visitation by a physician or trained nurse of every case of tuberculosis not under the care of a private physician or in a public institution as soon as it is reported. At these visits verbal instructions should be given, and printed circulars left for the information of the patient and the family. At the same time data should be gathered as to the history of the sick person and of the family, its social condition and financial income, the number of persons in the family and their wages; the number of cases of tuberculosis which have occurred, the probable source of infection in the individual; the sanitary condition of the premises, the amount of air space for each person, the character of the light and ventilation, the precautions being observed and the possible need of any further interference on the part of the authorities. In the course of these visits it becomes evident in many instances that a patient should be removed to a hospital or sent to a sanatorium outside of the city. In such instances, if possible, the patient should be induced by persuasion to avail himself or herself of such institutional care as seems desirable or available. If the patient persistently refuses institutional care, forcible removal must be resorted to in those instances in which the unsanitary conditions existing render it necessary.

5. The disinfection or renovation of rooms or apartments which have been vacated by consumptives either by death or removal. Trained medical inspectors should be sent whenever it comes to the knowledge of the authorities, that premises have been vacated by death or removal, and proper measures adopted to enforce disinfection of the premises by means of formaldehyde gas, or thorough renovation. In

those instances in which the premises are dirty and filthy, and the walls and ceilings are in bad condition, renovation, to be performed by the owners, should be required. If necessary for this purpose, the apartments may be vacated, or if already vacant, the occupation by others must be prohibited until such renovation has been completed. Carpets, rugs, clothing, pillows and mattresses, and any bedding or other textile fabrics, which cannot be properly disinfected by formaldehyde, should be removed by the authorities, and subjected to steam disinfection. Disinfection should be carried out by the health authorities without cost to the occupants or owners, but the cost of renovation, when required, should be borne by the owner of the premises.

A serious difficulty exists in this connectoin because of the frequent changes of residence of some families containing consumptives; and as the families become constantly poorer on account of the financial loss and expense entailed by the illness, they move continually to a poorer and poorer class of tenements. It is often impossible to trace them, or to obtain information of their change of residence, so that proper disinfection of the apartments may be ensured. The owners of the property may of course be required to furnish information of the removal, but there is danger lest this course may eventually entail some hardship on the poor consumptive in rendering it more difficult for him to find lodgings. This is the most troublesome problem to solve which we have found in New York. I do not feel sure that eventually notification by the owner of the removal of a consumptive will not be necessary, as the only solution of this difficulty.

6. Provision should be made for making repeated visits to cases in tenement houses, when for any reason it has been undesirable or impossible to remove the patient to an institution. These revisits may usually be best made by trained nurses. In this way information may be gathered as to changes of residence, as to the efficiency of the precautions adopted by the consumptive, as to the changes in his physical condition or the financial resources of the family, and as to the necessity of any alteration required in the sanitary treatment of the case.

7. Suitable food, especially milk and eggs, should be provided by the sanitary authorities or by other authorities having supervision of such affairs in those instances, in which the families are in such destitute circumstances, that proper or sufficient food cannot be obtained by them, and when the patient for any reason cannot be removed to an institution.

Some very difficult economic problems are presented in some of these cases. For example: A family consists of a mother with moderately advanced consumption and five small children; the father is dead; the income of the family from all sources is insufficient to maintain it properly and furnish the mother with suitable food. But the apartments are well ventilated and sufficiently commodious, they are clean and neat, and the mother makes every effort to obey every instruction and heed every suggestion. She insists on remaining with her children, and her presence is necessary to keep the family together. Undoubtedly the mother would be better off in an institution, and thus, too, the children would be removed to an institution for children, and would be better protected from the danger of tubercular infection. But then the children grow up as institutional children, which is most unfortunate, and, furthermore, there is no sufficient sanitary ground for the forcible removal of the mother. Under such conditions, for the present at least, I believe, the authorities should provide or see that there is provided, such food or other assistance as is required.

If, however, the apartments are dirty and not well kept, or are small, dark, and badly ventilated, or the instructions are not followed and proper precautions are not taken, then the family should be broken up, the mother should be removed to an institution, if necessary by force, and the children otherwise provided for.

No uniform regulations can be laid down for the disposition of such cases, but each one must be considered on its merits, and the ultimate decision in each instance determined after a careful consideration of all the facts.

The authorities should, however, recognize their responsibilities as to the provision in some instances of food, or other assistance, and should have means at their disposal for this purpose. If this assistance is dispensed by other author-

ities than the health authorities, it should be under the latter's direction and supervision.

8. The sanitary authorities should provide, or see that there are provided, and should supervise, three classes of institutions for consumptives:

Free Dispensaries.—In these free dispensaries medical treatment for ambulatory cases should be provided. These cases should be constantly under the supervision of the district physicians and nurses attached to the dispensary. Where necessary, not only medicines, but food, should be furnished free by the dispensary to the consumptive poor. The dispensaries should also act as clearing houses for consumptives, and should serve as places to which all institutional cases on their discharge from institutions and all poor cases receiving the care or assistance of charitable organizations should be referred for medical care. From this dispensary suitable cases should be referred to either a sanatorium or a hospital, as seems necessary.

Hospitals for the Care of Advanced Cases.—It is not necessary that all the hospitals for the care of advanced cases should be directly under the control of the sanitary authorities, although they should exercise a general supervision over these institutions. It is necessary, however, at least in a very large city, that the authorities should have control of at least one institution with adequate facilities for the care of certain varieties of advanced cases of the disease, which it may be necessary to forcibly remove to the institution and retain there against their will. These are of several types: First. Those which are discharged from other institutions, because they are from the institutional standpoint exceedingly undesirable patients, or because they have violated the regulations of the institution. A moment's consideration will show that the sanitary point of view and that of the authorities of an institution widely differ. In order to maintain the discipline of an institution cases which persistently violate its regulations must be dismissed. From the sanitary standpoint, these are of all cases those which it is specially important should be provided with institutional care. Homeless, friendless, dependent, dissipated and vicious consumptives are those which are likely to be most

dangerous to the community. If not cared for in an institution, they are wandering from place to place, living in lodging houses or sleeping in hallways or wherever cover can be found; negligent as to the disposal of their expectoration, and disseminating infection in every place which they visit. Such cases must be provided for by the sanitary authorities at any cost, and if necessary they must be removed by force to proper institutions and there detained.

Second.—Cases living in lodging houses, or those which are inmates of public institutions not having facilities for their care, who are unwilling to enter any of the institutions which are available, must be provided for and must be in the same way removed, by force if necesary, and detained.

Third.—It not infrequently becomes necessary in a large city to remove from their homes, cases which are almost necessarily sources of danger to the other members of their family; in those instances in which the sanitary conditions are very unfavorable, when there is great poverty, destitution, or overcrowding, and when the patients themselves are unwilling to enter an institution, the health authorities must intervene and remove such patients by force and detain them.

Fourth.—There are numerous cases which have already been under the care of an institution, and which become for some reason dissatisfied with their care and are determined to return to their homes. In these instances when the family is unwilling or unable to provide properly for them, the patients should be removed by the health authorities and retained under supervision.

It will be readily understood that the classes of cases, which have been referred to as necessarily coming under the supervision of the health authorities are generally very undesirable and difficult to control. Yet the experience of the Department of Health of New York has shown that rarely is any real difficulty experienced in the management of these cases, if the accommodations which are provided and the food and care given are of a superior character. It will be readily understood that the measures suggested here can only be taken where the sanitary authorities have full power and control, and that patients can be retained only in insti-

tutions over which they have direct authority. So far as I am aware the forcible removal of tuberculous patients has not been attempted by any sanitary authorities excepting those in New York City.

Sanatoria.—The sanitary authorities should provide or have available proper sanatoria in favorably situated country districts for the care of early and incipient cases. No further comments seem necessary on this phase of the subject. It is evident that as the authorities have to deal with both the prevention and care of tuberculosis, such institutions are imperatively demanded. As has often been pointed out, every early case removed to a sanatorium not only removes the individual who may be for a long period a source of danger to others, but also affords the best chance for recovery. Such patients when cured and discharged from the sanatorium are educational factors of no small moment in the community.

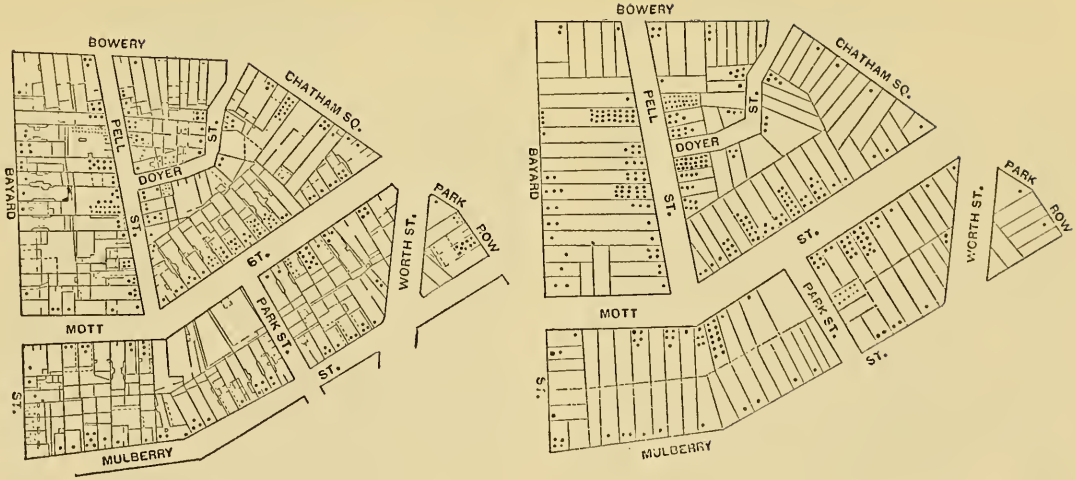
9. The sanitary authorities should issue regulations applicable to public institutions as to the care of consumptives. The admission and treatment of such patients in the general wards of general hospitals should be prohibited, and all public institutions caring for such patients should be required to provide separate rooms or wards. These regulations should apply not only to general hospitals, but also to the hospitals for the insane, to penal institutions, homes, asylums, etc. Suitable regulations should be formulated in regard to cases occurring among the teachers or pupils in the public schools and as to employees in factories, workshops and mercantile establishments, and as to occupations of a nature which are likely to disseminate the disease.

10. The sanitary authorities should enact and enforce regulations prohibiting spitting in all kinds of public conveyances, such as street cars, steam railroad cars, ferry-boats, etc., and on the floors of public buildings and places of public assembly, such as ferry-houses, depots, etc., and in the halls of tenement houses, theaters, in factories, etc. Spitting on the sidewalks should also be prohibited.

The fundamental importance of the careless disposal of sputum in the causation both of pulmonary tuberculosis and the acute respiratory diseases has not been fully recog-

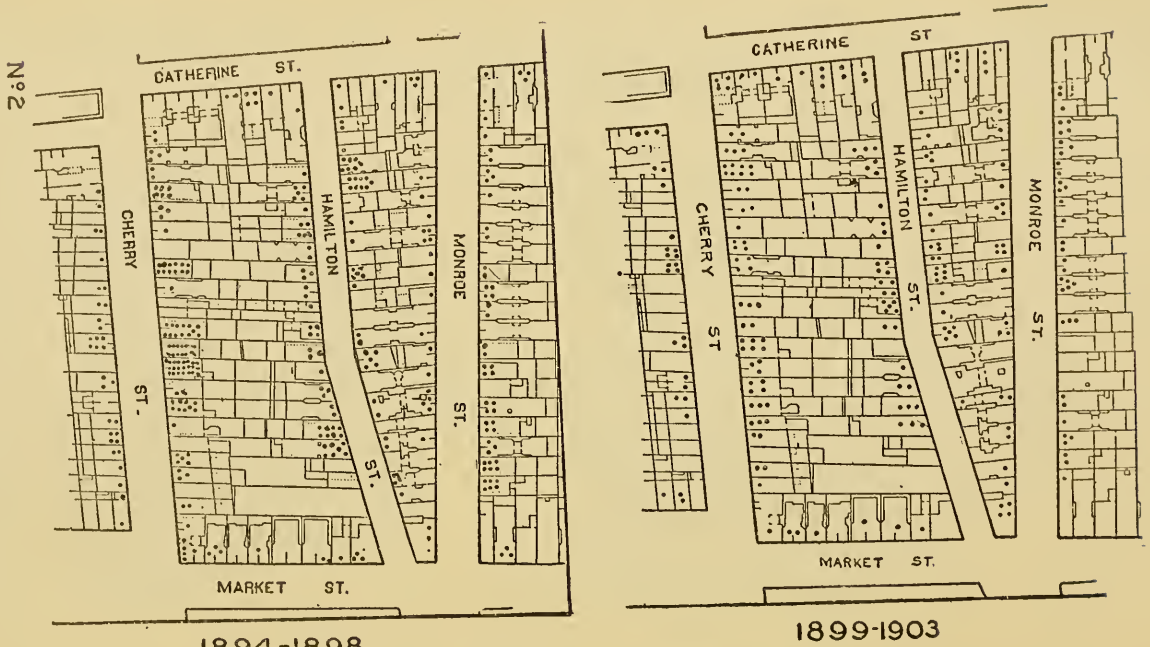
nized, I believe. It seems to me that here is the keynote to the whole question of the prevention of the diseases of the respiratory organs. In various forms of pneumonia as well as in tuberculosis, the causative microorganisms are found in the secretions of the respiratory tract; and when these secretions are not properly destroyed at the time of their discharge from the body, they become more or less widely scattered, dried, pulverized and suspended in the air as dust. Practically all of the organisms causing these diseases belong to the class which do not find favorable conditions for their multiplication outside of the living body, and therefore when they are effective in the causation of disease it is because they have been derived definitely from some other single case of disease. It is of vital importance in the propaganda for the prevention of tuberculosis and also of pneumonia, that we should educate all classes of the people to a recognition of and a belief in the fundamental importance of the proper disposal of the expectoration and should gradually inculcate the idea that the habit of spitting carelessly anywhere is not only filthy and indecent, but as in many instances to be regarded as almost criminal. When we have educated the mass of people up to this view, so that this habit of spitting will not be tolerated, the chief factor in the solution of the problem of the prevention of tuberculosis will, in my opinion, have been found.

A number of measures of minor importance in the surveillance of the tuberculous diseases have been in operation in New York City. Among these may be mentioned the semi-annual census of the cases of pulmonary tuberculosis under treatment in public institutions in the city. It has also been the custom during the last two or three years to communicate with the attending physician in cases of tuberculosis, which have been reported through the sputum examination or directly, and to enquire whether the patient is still under treatment, and if so, whether improvement has taken place or not, and whether the physician has any objection to a visit being made to the patient if he or she is not at that time under his observation. If the physician replies that the patient has passed from his observation, and he has no objection to an investigation by the department, an effort is

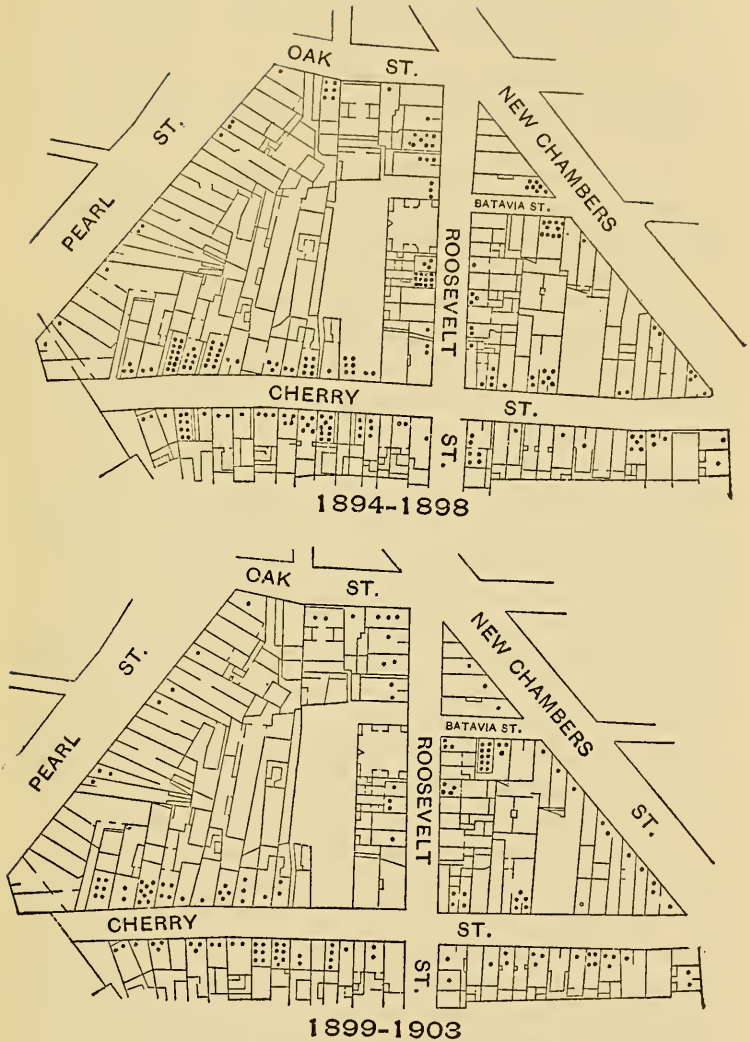


1894–1898 1899–1903

Infected Areas in Lower New York.



Infected Areas in Lower New York.



Infected Areas in Lower New York.

made to locate the patient and determine what the condition is.

Sanitary cuspidors are supplied by the department through trained nurses for the use of patients who are very poor in the tenement house districts, and large numbers of these cuspidors have also been supplied to various charitable societies, which have supervision of, or are extending help to cases of consumption in their homes.

Large numbers of circulars of information have also been supplied to these societies for distribution, and similar circulars in various languages have been furnished to various labor unions for distribution among their members.

The inspectors of the Tenement House Department, in the course of their house-to-house inspection, report to the Department of Health any cases of apparent tuberculosis which they may find, and these are investigated by the Department of Health.

In the very beginning of the work in New York sectional maps of the Borough of Manhattan were prepared showing every house lot in the borough on a sufficiently large scale so that all cases of tuberculosis which came under the observation of the department and all deaths from this disease could be plotted, to show the topographical distribution of the disease. I have had some of these reproduced to show the extraordinary prevalence of the disease in some of the crowded tenement house districts.

Attempts are now being made to secure the condemnation by the city of several areas in the tenement house districts in which tuberculosis has been particularly prevalent.

One minor measure which has been found of much service in New York has been the house-to-house inspection in tenement house districts by women physicians in the search for unreported cases of tuberculosis. Quite a large number of such cases have been found in this way, especially among the foreign population. It is also of the greatest importance in this connection that the trained nurses and medical inspectors should know the language of the people whom they are visiting. Great care has been taken, as far as it was possible under the civil service regulations, to obtain trained nurses and physicians who speak foreign lan-

guages. We have now engaged in this work nurses who speak French, German, Yiddish, Russian, Italian and Polish.

These measures as detailed seem to me to include the more important provisions of a scheme for the efficient administrative control of tuberculosis. Several questions arise in this connection: (1) Is such a scheme feasible and practicable? (2) Are there serious objections to the enforcement of the measures proposed? (3) What results may be reasonably expected from the enforcement of such measures?

In answer to the first question—Is such a scheme of sanitary surveillance of tuberculosis feasible and practicable? —I would say decidedly, it is. In its main and most important features such a plan has been in force in New York City for a number of years. The feasibility and the practicability have been conclusively demonstrated by an experience in the second largest city in the world. In only a few of the less important details is the general plan as now followed in New York wanting. Referring to these measures specifically, it may be said as to registration that 20,000 new cases were registered in the year 1906 in New York City; and over 21,000 specimens of sputum were examined. Large numbers of circulars of various kinds designed to reach different classes of the community are being and have been issued each year. During the one year over 100,000 "Circulars of Information for Consumptives and Those Living with Them" were issued by the Department of Health. These were printed in many different languages, for example: English, German, Italian, Yiddish, Chinese, Russian, Ruthenian, Polish, etc.

All cases of tuberculosis reported to the department not under the direct care of a private physician are regularly visited by medical inspectors and trained nurses, and the main facts in regard to the individual, family, sanitary conditions of the premises, etc., are gathered; instructions are given and circulars of information left. All rooms or apartments which have been vacated by consumptives either by death or removal, so far as the department can obtain such information, are either immediately disinfected or renovation is ordered and their occupation by others prohibited until the orders are complied with. Carpets, rugs, pillows, mat-

tresses, etc., are removed by the department, disinfected by steam, and returned. Provision is made for continuous supervision of such cases as remain in tenement houses and require such supervision, through specially trained nurses and medical inspectors.

Special dispensaries for the treatment of consumptives have been provided in Manhattan, Brooklyn and The Bronx, where treatment, medicines and necessary food (milk and eggs) are furnished free of charge. Some years ago a series of pavilions was opened at Riverside Hospital on North Brother Island by the Department of Health for the care of those whom it is necessary to remove by force and detain, such as the undesirable and insubordinate cases discharged from other institutions, and also homeless, friendless and vicious cases.

A sanatorium for the care of incipient cases among the poor has been opened at Otisville, New York, where eventually 200 or more patients will be accommodated. Only early favorable cases are admitted.

Regulations have been enacted relating to careless expectoration, and to a considerable extent have been enforced in public conveyances. The regulations prohibiting spitting on sidewalks, in the public halls of public buildings, tenement houses, etc., have not as yet been enforced, although it is proposed to soon adopt more active steps in this direction.

The Department of Health of New York City, with the exception of the special diet above referred to, has not as yet undertaken to provide food or assistance to the consumptive poor living at home, where for any reason they cannot or should not be removed, neither has it undertaken to provide full regulations for the supervision of such cases in public institutions, in the public schools and as regards employees in factories, and occupations in which consumptives are likely to be a source of danger.

Excepting in these respects, the scheme as presented has been practically in force for a number of years in New York City, the extent and the strictness of the supervision having each year during the last ten years been materially increased. What, therefore, is practicable and feasible in New York should be practicable and feasible in cities of

TABLE GIVING DEATH RATE, NUMBER OF DEATHS, AND OTHER DATA CONCERNING TUBERCULOSIS IN THE CITY OF NEW YORK FROM 1881 TO 1906.

I.—MANHATTAN AND THE BRONX.

Year	General Population	Total Deaths All Causes	General Death Rate	Total Tuberculosis Deaths	Death Rate All Tuberc.	Deaths Phthisis	Deaths Other Tuberculosis	Per Cent. of Tuberc. on Total Deaths	Death Rate Phthisis	Total No. Cases Tuberc. Reported inc. Duplicates	Duplicates	No. Spec. Sputum Exam.
1881 ...	1,244,511	38,624	31.04	6,123	4.92	5,312	811	15.85	4.27			
1882.....	1,280,857	37,924	29.61	6,052	4.72	5,247	805	15.96	4.10			
1883.....	1,318,264	34,011	25.80	5,943	4.51	5,290	653	17.47	4.01			
1884.....	1,356,764	35,034	25.82	6,039	4.45	5,235	804	17.28	3.86			
1885	1,396,388	35,682	25.55	5,945	4.26	5,196	749	16.66	3.72			
1886.....	1,437,170	37,351	25.99	6,349	4.42	5,477	872	16.99	3.81			
1887.....	1,479,143	38,933	26.32	6,007	4.06	5,260	747	15.43	3.56			
1888	1,522,341	40,175	26.39	6,073	3.99	5,260	813	15.12	3.46			
1889.....	1,566,801	39,679	25.32	6,041	3.86	5,179	862	15.22	3.30			
1890	1,612,559	40,103	24.87	6,409	3.97	5,492	917	15.98	3.41			
1891	1,659,654	43,659	26.31	6,109	3.56	5,160	949	13.99	3.11			
1892	1,708,124	44,329	25.95	6,061	3.55	5,033	1,028	13.67	2.95			
1893	1,758,010	44,486	25.30	6,163	3.51	5,124	1,039	13.85	2.91			
1894.....	1,809,353	41,175	22.76	5,720	3.16	4,658	1,062	13.89	2.57	4,166		511
1895 ...	1,873,201	44,420	23.18	6,283	3.35	5,205	1,078	14.47	2.78	5,824		1,147
1896	1,906,139	41,622	21.84	5,926	3.11	4,994	932	14 24	2.62	8,334		1,856
1897	1,940,553	38,877	20.03	5,791	2.98	4,843	948	14.89	2.50	9,735		2,703
1898	1,976,527	40,438	20.46	5,901	2.99	4,957	944	14.59	2.51	10,798	2,239	2,920
1899	2,014,330	39,911	19.81	6,209	3.08	5,238	971	15.56	2.60	10,484	2,472	3,115
1900	2,055,714	43,227	21.03	6,179	3.00	5,278	901	14.29	2.56	9,639	2,436	3,512
1901	2,118,209	43,307	20.44	6,049	2 85	5,233	816	13.97	2.47	12,135	3,005	4,397
1902	2,182,836	41,704	19.11	5,744	2.63	4,893	851	13.77	2.24	13,383	3,738	4,631
1903.....	2,241,680	41,749	18.56	6,086	2.70	5,250	836	14.60	2.33	15,787	4,698	7,764
1904 ...	2,318,831	48,693	21.00	6,275	2.71	5,495	780	12.89	2.37	20,451	6,638	9,606
1905	2,390,382	45,199	18.91	6,348	2.66	5,678	670	14.04	2.38	24,142	9,106	11,431
1906	2,464,432	46,108	18.71	6,696	2.72	5,900	796	14.52	2.59	22,092	8,201	11,384

II. - GREATER NEW YORK.

1898	3,272,418	66,224	20.26	9,265	2.69	7,724	1,541	13.97	2.25			3,945
1899	3,356,722	65,344	19.47	9,575	2.70	8,016	1,559	14.65	2.26			4,500
1900 ...	3,446,042	70,872	20.57	9,630	2.79	8,154	1,476	13.59	2.37	14,433	2,456	5,289
1901.....	3,554,079	70,717	19.91	9,389	2.64	8,135	1,254	13.28	2.29	17,588	4,191	6,744
1902.....	3,665,825	68,112	18.58	8,883	2.42	7,571	1,312	13.44	2.07	16,614	4,268	7,820
1903.....	3,781,423	67,923	17.96	9,287	2.46	8,001	1,286	13.70	2.12	20,266	5,052	11,859
1904.....	3,901,023	77,985	19.99	9,744	2.50	8,495	1,249	12.49	2.18	28,444	9,721	16,971
1905	4,024,780	73,714	18.31	9,658	2.40	8,535	1,123	13.10	2.12	31,963	11,132	18,039
1906.....	4,152,860	76,203	18.35	10,194	2.45	8,955	1,239	13.38	2.16	30,826	10,741	21,779

smaller size, and it should be possible to enforce more readily and more satisfactorily similar regulations in them.

As to the second question—Are there serious objections to the enforcement of such a scheme, or are the objections valid which have been urged by some authorities?—the reply to this is decidedly in the negative. Very great opposition met the proposition of the Department of Health of New York to undertake this work in the beginning and many difficulties were encountered in the early years owing to this opposition. But experience has shown that the obstacles are largely imaginary ; that the harmful results which were predicted as certain to follow have failed to materialize. Practically no serious difficulties are encountered in carrying on the work. I would say that the difficulties with reference to the work of the department in New York in relation to tuberculosis are really less serious than those encountered in connection with the contagious diseases. There has been hearty approval by the majority of the medical profession, and acquiescence by the remainder.

In answer to the third question—What may be reasonably expected from the enforcement of such measures?—we find again an answer in the experience of New York. There has been a rapid fall in the tuberculosis death rate in New York City, and this notwithstanding the fact that the conditions in many respects are most unfavorable, because of the very dense population in the great tenement house districts of the city and the large element of foreign-born population. It should be remembered that in no city of the world is there such a density of population as exists in many of the wards of the Borough of Manhattan. In numerous districts on the East Side the population varies from 600 to 800 or more persons to the acre, whereas the most densely populated districts of Paris, London, Vienna and Prague have only 400, or less persons to the acre. When this fact is kept in mind the difficulty in reaching the large foreign-born element of the population, which speak their native tongue and retain their native customs, will be appreciated.

During the last twenty years there has been a decrease of more than 55 (.67 per 1000 to .26) per cent. in the death

DEATHS FROM PULMONARY TUBERCULOSIS AND TUBERCULAR MENINGITIS, 0-15 YEARS, OLD CITY OF NEW YORK, 1883-1905.

		0-5	5-10	10-15	Total under fifteen	Total, both under fifteen	Yearly death rate per 1000 of entire population	Death rate per 1000 population; 5 year periods
1883	Tubercular meningitis*	485	46	10	541			
	Pulmonary tuberculosis	172	30	59	261	802	0.61	
1884	T. M.*	633	37	13	683			
	P. T.	207	36	55	298	981	0.72	
1885	T. M.*	594	40	5	639			
	P. T.	200	35	65	399	938	0.67	0.67
1886	T. M.*	648	58	15	721			
	P. T.	216	38	48	302	1023	0.71	
1887	T. M.*	570	38	13	621			
	P. T.	206	47	48	301	922	0.62	
1888	T. M.	440	53†		493			
	P. T.	154	100†		254	747	0.49	
1889	T. M.	498	45†		543			
	P. T.	138	110†		238	781	0.50	
1890	T. M.	500	44	12	556			
	P. T.	151	39	53	543	799	0.50	0.49
1891	T. M.	524	48	11	583			
	P. T.	118	29	62	210	792	0.48	
1892	T. M.	541	50	14	605			
	P. T.	158	39	56	253	858	0.50	
1893	T. M.	542	54	11	607			
	P. T.	157	34	68	259	866	0.49	
1894	T. M.	522	63	13	598			
	P. T.	128	32	50	210	808	0.45	
1895	T. M.	526	43	16	585			
	P. T.	165	24	50	239	824	0.44	0.42
1896	T. M.	454	45	12	511			
	P. T.	120	32	48	200	711	0.37	
1897	T. M.	462	47	8	517			
	P. T.	128	25	44	197	714	0.37	
1898	T. M.	481	49	10	540			
	P. T.	100	31	45	176	716	0.36	
1899	T. M.	475	45	12	532			
	P. T.	143	28	55	226	758	0.38	
1900	T. M.	447	57	18	522			
	P. T.	116	35	42	193	715	0.35	0.34
1901	T. M.	392	49	16	457			
	P. T.	117	28	55	200	657	0.31	
1902	T. M.	400	59	14	473			
	P. T.	88	26	47	161	634	0.30	
1903	T. M.	426	58	15	499			
	P. T.	79	31	59	169	668	0.31	
1904	T. M.	353	55	12	420			
	P. T.	122	38	76	236	656	0.28	
1905	T. M.	319	52	8	379			
	P. T.	138	40	68	246	625	0.26	
1906								

* Includes hydrocephalus. † 5-15 years.

rate in children under fifteen years from pulmonary tuberculosis and tuberculous meningitis, these being the two forms of tuberculous disease in which an approximately accurate diagnosis is likely to be made in children. It is precisely in this, the youngest element of the population, that one would first look for definite results from the enforcement of measures for the restriction of this disease. There has also been a decrease in the total tuberculous death rate between 1886 and 1906—a period of twenty years—of 40 per cent.

A considerable fall in the death rate from tuberculosis has been noted in various countries and cities, and it has been maintained and apparently shown that the decrease was only in small part a real decrease and was accompanied by an almost equal increase in the death rate from the acute pulmonary diseases, notably pneumonia. The claim has been made that there has been simply a substitution in the death returns of pneumonia for tuberculosis. Very great care has been taken in New York City to investigate this phase of the problem, and it may be said in the first place that no corresponding increase has taken place in the death rate from the acute pulmonary disease. A small increase has occurred since the first great grip epidemic in 1890, but this increase amounts to only about 10 per cent., and is, I believe, due to the influence of grip in increasing the death rate from the acute pulmonary diseases.

During the last three or four years, at intervals, all of the pneumonia deaths have been compared with the card index of tuberculosis cases reported, to determine whether any cases reported as tuberculosis were subsequently returned as having died from pneumonia. This investigation showed a very small number of cases of this kind, not exceeding three or four a week in the Boroughs of Manhattan and The Bronx, and subsequent investigation in these, in the majority of instances, showed that a reasonable doubt existed as to whether they were tuberculous originally or whether tuberculosis was at all a factor in the causation of death. In addition to this, at intervals, especial detailed investigations have been made of all the deaths reported from pneumonia, occurring in persons over five years

of age and not reported by large public institutions. The latter were excluded because it seemed fair to assume that the reports of death from large public institutions could be relied upon as accurate. Some hundreds of deaths of this sort have been investigated, to determine whether the history of the disease as given by the family and the attending physician justified the assumption that death was really due to tuberculosis and not due to pneumonia. The results of these investigations have again shown that in a surprisingly small number of them was there any real reason for assuming that tuberculosis was a factor in the causation of death.

The investigation of these pneumonia deaths is still being continued, and in all instances, where the facts justify the assumption that death was due to tuberculosis, the death records are correspondingly changed. As further investigation has shown that nearly 90 per cent. of the deaths returned as due to tuberculosis have been previously reported to the department as suffering from tuberculosis, the conclusion seems to be thoroughly substantiated that the decrease in the deaths from tuberculosis is a real one and not in any material respect merely apparent.

I do not at all intend to indicate that the whole of the reduction in the death rate from tuberculosis in New York City has been the result of the measures directed especially against this disease, for many other factors have undoubtedly contributed to it, but I do believe that the very great and rapid fall in the tuberculous death rate is the direct result of the application of these measures; and I fully believe that the next fifteen years will see a reduction nearly equal to that which has already taken place.

If we accept at all the necessary deductions of our scientific convictions in relation to tuberculosis, there can be no escape from the conclusion that tuberculosis is of all the important infectious diseases with which we have to deal certainly the most preventable. I am not only prepared to accept fully the deductions from the known facts in regard to this disease as to the possibilities in its prevention, but would regard the experience of New York City as furnishing conclusive proof of the truth of this conclusion.

This is the great urgent sanitary problem of the 20th century. In no other direction can such large results be achieved so certainly and at such relatively small cost. The time is not far distant when those States and municipalities which have not adopted a comprehensive plan for dealing with tuberculosis will be regarded as almost criminally negligent in their administration of sanitary affairs and inexcusably blind to their own best economic interests.